Faculty of Science
School of Environmental Sciences

Senior Research Associate • Ref: RA1610

The Post

The post holder will work as a post doc within the H2020 project *The Added Value of Seasonal Climate Forecasts for Integrated Risk Management Decisions* (SECLI-FIRM, http://www.secli-firm.eu/) focusing on the science and technical aspects of seasonal climate forecasting.

Based at the Climatic Research Unit (CRU) of UEA, this work is focused at the frontier of research on Earth System Prediction and its applications. Demand for reliable seasonal climate predictions is increasing markedly and will further continue to do so in the future. This demand is boosting novel and exciting research on climate predictability and related demand for skillful and reliable probabilistic information by users. Specific research within SECLI-FIRM is focused on understanding and exploiting tele-connected vs. locally-forced prediction signals, predictability of weather patterns and regimes, statistical downscaling techniques and optimized probability forecasts of high-risk extreme climate events.

We seek a highly motivated post-doctoral researcher to join our world-leading, international and interdisciplinary research project. The specific role of the post holder will be to assess, in collaboration with project partners, the skill of multi-model approaches so as to estimate and improve the current prediction performance of seasonal climate forecasting for the key climate variables considered in the SECLI-FIRM case studies with our industry partners. This will use a multi-model seasonal prediction dataset from a range of worldwide models, including the Copernicus Climate Change Service (C3S) systems, the North American Multi-Model Ensemble (NMME) systems and others. The capability of the models to properly represent the large-scale phenomena underlying predictability will be evaluated. This will allow us to identify and select the models that are able to maximize the skill coming from teleconnections and those able to make the most of the skill coming from local processes (soil moisture, snow and vegetation). Downscaling approaches will also be investigated. A comprehensive set of user-driven techniques aimed at maximizing the prediction performance, the reliability, and the usefulness of the seasonal climate predictions will be researched and developed, based on the recommendations and the needs of the SECLI-FIRM industry partners and co-designers. The ultimate aim of this task is to feed the most skilful seasonal forecasts to the SECLI-FIRM case studies, so as to allow the quantification of the value add to the decision-making processes considered.

The post holder will be jointly supervised by the SECLI-FIRM Principal Investigator, Prof. Alberto Troccoli, and Work Package 2 leader Dr Andrea Alessandri (KNMI), and will have the optional opportunity to spend part of their appointment at the Dutch Met Service, KNMI or other project partner institution.

Applicants with experience in multidisciplinary research and a PhD degree in climate or atmospheric sciences, applied statistics, hydrometeorology, environmental science, or an engineering field, with significant experience in seasonal climate forecasting and/or Earth system processes and/or statistical analysis will be an ideal fit for this position. Applicants will ideally have a demonstrated research expertise in analysing global climate models and a good understanding of atmospheric teleconnections and predictability originating from tropical and extra-tropical sources. Familiarity with sectoral applications will be an asset. Considerable expertise and in-depth knowledge of programming languages such as R, cdo, nco and Python, in the use of very large datasets, and familiarity with UNIX environment and scripting will be invaluable assets. The successful candidate will have proven ability to write journal articles and is expected to publish research findings in highly reputable international journals.

The precise duties will be agreed in discussion with the supervisors for this post.

- Although working under the general guidance of the Principal Investigator and Work Package 2 leader, they will contribute ideas, including enhancements to the technical or methodological aspects of the study, to the research project, thus providing substantial ‘added value’
- Determine and deploy appropriate methodologies for research, with advice and support.
- Write up their own research work for publication, with appropriate support, in respected journals or equivalent and/or contribute as a team member to larger publications.
- Present research findings, either at conferences or seminars appropriate to the discipline.
- Contribute to grant applications submitted by others.
- May (consonant with the terms of their funding) contribute to the teaching of students in the School, usually within their own field of expertise and knowledge of research methods.
- May be involved in the supervision, with guidance, of final year undergraduate/taught postgraduate research projects as well as the day-to-day supervision of PhD students.
- May (consonant with the terms of their funding) identify personal research objectives, develop a plan for personal research and initiate research that leads to the development of knowledge and theoretical understanding.
- Begin to write, with appropriate support, bids for individual research funding or, where funders do not permit this, contribute to the writing of collective bids.
- Begin to referee papers for external bodies.
- Participate effectively in activities to achieve engagement with research, and/or impact beyond academia.

- Where the research is apposite, begin to develop entrepreneurial or collaborative links either with external organizations or with in-house companies.
- Where appropriate, register patents to protect intellectual property.
- Will be actively developing their own research network with researchers in other institutions, nationally and internationally.
- Will communicate with users of, and communities relevant to, the research and, as appropriate, the subjects of their research.

The precise duties will be agreed in discussion with the PI.

The Project

The central objective of SECLI-FIRM is to demonstrate how the use of improved climate forecasts, out to several months ahead, can add practical and economic value to decision-making processes and outcomes, primarily in the energy sector, but also in the water sector. Specifically for the energy sector, SECLI-FIRM will assess the impact on operational planning and portfolio management, such as hedging and asset optimization, thus enabling quantification of the value-add provided by seasonal forecasts which have been calibrated, evaluated and tailored for each specific application. Improvements in management decisions will ultimately lead to an improved supply-demand balance and therefore to a more efficient energy system, particularly with respect to renewable energy, with corresponding benefits for climate change mitigation.

The multi-model approach will be used to go beyond current limitations of prediction performance. A multi-model seasonal prediction dataset from independent sources will be developed. A comprehensive set of user-driven techniques aimed at maximizing the prediction performance, the reliability, and the usefulness of the seasonal climate predictions will be researched and developed, based on the recommendations and the needs by stakeholders provided.

The School

The School of Environmental Sciences is one of the largest and longest established academic departments in Europe to focus on the study of the global environment. We have 240 research, teaching and support staff in the fields of geosciences, marine and atmospheric sciences, climate sciences, environmental biology, social sciences and economics. Our success is built on high achievement within these disciplines, coupled with enthusiasm for collaboration between them and high ambitions for deepening integration.

In line with its strong interdisciplinary ethos, the School has no formal sectors or subdivisions by discipline, and research collaborations occur within and between the subject groupings mentioned above, together with common membership. Some elements of the School are organised into centres, which also have strong collaborations and joint membership across their loose boundaries. The School's outreach activity includes the weather forecasting

company, WeatherQuest, the Community Carbon Reduction Project, CRed, and the HEIF-funded Carbon Connections programme, promoting technological innovations for carbon reductions. These latter organisations have recently combined to form the Adapt Low Carbon Group.

The School has a range of geophysical equipment for use in gravity, magnetic, electrical and seismic survey work. Computing facilities available to the university research community include: the High Performance Computing Cluster; Linux support and provision of standardised Linux Desktop OS.

The School runs a number of Master's degree programmes, including MSc programmes in Environmental Sciences, Climate Change, and Environmental Assessment and Management (full-time and part-time). BSc programmes include Environmental Sciences, Environmental Earth Sciences, Environmental Geophysics, Geography, and Meteorology and Oceanography (with variants offered with a year in a number of other countries, or with a year in industry). One BSc degree programme, Environmental Geography and International Development, is taught jointly with other Schools.

Research Excellence Framework

In the 2014 Research Excellence Framework national assessment, the Faculty of Sciences at UEA submitted most of its staff to six units of assessment. Overall, 86% of our outputs, 83% of our research impact, and 96% of our research environment were judged to be internationally excellent or world leading.

The School of Environmental Sciences retained its world-leading reputation following the findings of the 2014 Research Excellence Framework national assessment, in which it was ranked in the top ten, and achieved the highest score in the UK for the quality of its research impact. 100% of the School's research environment was judged to be world-leading or internationally excellent.

The University of East Anglia is proud of the increasing diversity of its campus and works with staff, students and organisations around Norwich, Norfolk, regionally and nationally, to achieve its aim of being an inclusive place for study and work. The University is strongly committed to the Athena SWAN principles and is the proud holder of an institutional Bronze Athena SWAN award. This Award recognises and celebrates good practice in recruiting, retaining and promoting women in science, technology, engineering, mathematics and medicine (STEMM) in higher education.

In May 2015 the charter was expanded to recognise work undertaken in arts, humanities, social sciences, business and law (AHSSBL), and in professional

and support roles, and for trans staff and students. The charter now recognises work undertaken to address gender equality more broadly as well as barriers to progression that affect women.

The School of Environmental Sciences is committed to the principles of the Athena SWAN charter; and we have obtained our own School level Silver Award.

Further information about Equality and Athena SWAN at the University of East Anglia can be found here https://www.uea.ac.uk/equality/athenaswan

Our School aims to provide the facilities and the working environment that allows all staff and students to contribute fully, to flourish and to excel. Our School of Environmental Sciences Athena SWAN Committee is committed to recognising and addressing inequality and to promoting a culture that supports diversity and encourages women's wider participation and representation across the School's portfolio of activities. We recognise the importance of supporting women at all stages of their careers, and we proactively support women in applications for promotion, pay awards, flexible working, training and career development in both research and teaching.

The UEA campus has a range of facilities to promote family-friendly working. We have a fully equipped dedicated baby change and feeding room with hand washing facilities, baby changing station, fridge, microwave, bottle and food warmer, and a medical bed for rest purposes. Baby changing facilities are also available in our campus coffee shop. The campus has a medical centre, a dental practice, and a nursery offering Ofsted-rated 'Outstanding' day care for children from three months until school age in purpose built surroundings with large outside play spaces.

We also support a range of flexible working initiatives, designed to promote a healthy work-life balance as well as supporting staff returning from parental leave and career breaks.

Many other aspects of the University contribute to the overall quality of life and work for our staff at UEA, further details can be found here *https://lred.uea.ac.uk/web/working-life/home*

Informal Discussions

For an informal discussion please contact Professor Alberto Troccoli, (Tel: 01603 591413 or email: a.troccoli@uea.ac.uk).

Person Specification

The person specification for this post is attached as Appendix A.

GENERAL

Salary

Salary will be £33,199 to £39,609 per annum, on Grade 7 on the single salary spine. The normal expectation is that starting salary will be at the minimum of the advertised salary scale.

Starting date

This full time post is available from 1 July 2019, or as soon as possible thereafter, for a fixed term period of 24 months, until 30 June 2021.

Terms and Conditions of Appointment

Full details of terms and conditions of employment for Research and Analogous Staff will be made available to the candidate to whom the appointment is offered.

Annual Leave Entitlement

There is an annual holiday entitlement of six weeks plus statutory (8 days) and customary (6 days) holidays, pro rata for part time.

Superannuation

The post is superannuable under the Universities Superannuation Scheme.

Proof of Qualifications

The person specification for this post lists qualifications that are essential and/or desirable and you may hold some or all of these qualifications. Please note that if you are offered the appointment you will be asked to provide original certificates of these educational and professional qualifications. Please **DO NOT** provide these with your application.

Entitlement to Work in the United Kingdom

If you are shortlisted for interview you will be asked to bring to interview original documentary evidence of permission to work in the UK in line with a list of acceptable documents which we will provide to shortlisted candidates when invited for interview. Please **DO NOT** provide this with your application.

This vacancy is eligible for sponsorship under Tier 2 and, where appropriate, the University will apply for a Certificate of Sponsorship. Non-EEA workers who do not have residency status within the UK and will require entry clearance or further leave to remain should familiarise themselves with the Tier 2 (General) Guidance .

Occupational Health Assessment

Appointment will be subject to a satisfactory Occupational Health Assessment to be carried out by the University's Occupational Health Service.

APPLICATION AND RECRUITMENT PROCESS

To apply for this vacancy, please follow the online instructions at: https://myview.uea.ac.uk/webrecruitment/

Your completed application and CV should be submitted by **9 May 2019**.

All communication with candidates regarding their applications will be by email. Please check your emails (and spam folder) regularly.

Please note that feedback will not normally be provided to those applicants who are not shortlisted for this post.

Equal Opportunities Monitoring Form

Please note that an Equal Opportunities Monitoring Form must be completed and returned with ALL applications, whether submitted by post or by email. If submitted by email, the Equal Opportunities Monitoring Form must be sent as a separate document/attachment to the Application Form.

The Equal Opportunities Monitoring Form will be detached from the received application before short-listing takes place and will not form any part of either the short-listing or decision making process.

Referees

In naming referees in your application, you are requested to give only those who can immediately be approached and one of these must be your current employer, or if not employed your most recent employer.

Interviews

It is anticipated that interviews and presentation will take place on 4 June 2019 and candidates who have not heard by that date should assume their application has been unsuccessful.

Successful shortlisted candidates may be notified of their interview times by telephone and/or email and it is therefore essential you include both of these in your application.

Candidates should note that travel and incidental expenses incurred in attending the interview will not be reimbursed.

This document is available in alternative formats e.g. large print, disc and on-line. If you need this document in an alternative format please contact us on 01603 593034, fax 01603 593522, or email hr@uea.ac.uk

APPENDIX A

PERSON SPECIFICATION

Title: Senior Research Associate **Ref: RA1610** **School: ENV**		**Edited by: AT** **Date: 04/19**
Criteria	**Essential**	**Desirable**
Education, Experience and Achievements	• A PhD degree (or equivalent experience) in climate or atmospheric sciences, applied statistics, hydrometeorology, environmental science, or an engineering field, with significant experience in climate forecasting and/or Earth system processes and/or statistical analysis. • Significant previous experience of independent research. • Presentations at conferences and some publications in respected journals or equivalent in the field**.**	• Exposure to multidisciplinary research.
Skills and Knowledge	• Excellent computing skills – use of one or more of the following: R, cdo, nco, Python. • Excellent handling of massive data files of the order of many TB and their retrieval (via API, ftp, wget, etc). • Excellent report writing and presentation skills. • Good time management and organisational skills**.** • Good interpersonal skills. • Initiative in planning research and undertaking independent work.	• Ability to interpret statistical results from a physically-based perspective. • Familiarity with assessment of large-scale vs more local-scale processes. • Familiarity with downscaling techniques for climate studies, and sector applications.

	• Full awareness of the ethical issues involved in their research work.	
Personal Attributes	• Ability to communicate complex information clearly, both orally and in writing in English. • Ability to work collaboratively with colleagues and students. • Ability to organise their own time and work, to meet deadlines, and manage competing priorities**.**	
Special Circumstances		